NOTES.

WE notice with profound regret the announcement of the death on November 16, at sixty-six years of age, of Prof. Raphael Meldola, professor of chemistry in the City and Guilds of London Technical College, Finsbury.

THE following is a list of those who have been recommended by the president and council of the Royal Society for election into the council for the year 1916 at the anniversary meeting on November 30:—*President*, Sir J. J. Thomson; *Treasurer*, Sir A. B. Kempe; *Secretaries*, Prof. A. Schuster and Mr. W. B. Hardy; *Foreign Secretary*, Dr. D. H. Scott; *Other Members of the Council*, Prof. J. G. Adami, Sir T. Clifford Allbutt, Dr. F. F. Blackman, Dr. Dugald Clerk, Sir William Crookes, Prof. A. Dendy, Prof. J. Stanley Gardiner, Dr. H. Head, Mr. G. W. Lamplugh, Prof. A. E. H. Love, Major P. A. MacMahon, Prof. R. Meldola (since deceased), Prof. A. Smithells, Prof. E. H. Starling, Mr. R. Threlfall, and Sir Philip Watts.

THE Nobel prizes for 1914 and 1915 have now been awarded. According to the *Morning Post* the prize for chemistry for the former year is awarded to Prof. Theodore William Richards, of Harvard University, and that for physics to Prof. M. v. Laue, of Frankfurt-on-Main. The physics prize for 1915 is awarded jointly to Prof. W. H. Bragg (now of University College, London, but until recently professor of physics in the University of Leeds), and his son, Mr. W. L. Bragg. The chemistry prize goes to Prof. R. Willstätter, of Berlin.

WE regret to see the announcement of the death, at fifty-six years of age, of Mr. Booker T. Washington, principal of the Tuskegee Institute, Alabama, whose labours for the practical education of negro students have been of untold benefit to the coloured people of the United States and West Indies.

THE death is announced, in his forty-seventh year, of Mr. Wirt Tassin, who was a special agent of the U.S. Geological Survey at the Chicago Exposition, and from 1893 to 1909 was assistant-curator of the division of mineralogy at the U.S. National Museum. He had since been occupied as a consulting metallurgist and chemical engineer.

AT the anniversary meeting of the Mineralogical Society, held on November 9, the following officers and members of council were elected:—*President*, W. Barlow; *Vice-Presidents*, Prof. H. L. Bowman, A. Hutchinson; *Treasurer*, Sir William P. Beale, Bart.; *General Secretary*, Dr. G. T. Prior; *Foreign Secretary*, Prof. W. W. Watts; *Editor of the Journal*, L. J. Spencer; *Ordinary Members of Council*, Dr. J. J. Harris Teall, F. N. Ashcroft, Prof. H. Hilton, A. Russell, W. Campbell Smith, Dr. J. W. Evans, Dr F. H. Hatch, J. A. Howe, T. V. Barker, G. Barrow, Dr. C. G. Cullis, F. P. Mennell.

MR. F. W. SMALLEY makes a valuable contribution towards our knowledge of the significance of the plumage phases of the ducks in the November number of *British Birds*. He surveys not only the adult, but also the nestling-down plumages. Out of the wealth of material obviously at his disposal it is to be hoped that in the immediate future he will complete the records which he has made of the several species of British ducks, and especially of the "diving-ducks."

PARASITOLOGISTS will find some valuable notes on the eggs of *Ascaris lumbricoides*, by Mr. L. D. Wharton, in the *Philippine Journal of Science* (vol. x., sec. D, No. 2). The author obtained his material from autopsies at the city morgue, and has devoted special attention to "atypical" eggs, such as have been mistaken for the eggs of other species. Eggs lacking the mammillated outer layer have been laid together with typical eggs by the same female, isolated in Kronecker's salt solution, in the laboratory. He also gives the characters by which unfertilised can be distinguished from fertilised eggs, and abnormal features apparently induced by artificial conditions.

THE *Scottish Naturalist* for November contains an admirable "Interim Report on the Aberdeen University Bird-migration Inquiry," by Mr. A. Landsborough Thomson, now serving his country "somewhere in France." This inquiry, it may be remembered, has been started for the purpose of tracing the wanderings of birds, mostly nestlings, marked at the nest with a metal ring bearing a number, enabling their captors, at a later date, to record the date and place of capture, and thus to establish the wanderings of that particular bird. Hitherto the co-operators in this scheme have been allowed to mark birds almost indiscriminately; to attain a higher efficiency, and to economise labour, selected species only are henceforth to be marked. Such are birds which are procurable for ringing in large numbers, which afford a fair percentage of reappearance records, and the migratory movements of which are of sufficient interest to repay close investigation. The lapwing, woodcock, mallard, blackbird, and song-thrush are specially mentioned as fulfilling these conditions, a fact which may well be noted by those who desire to assist in this most promising investigation.

ALTHOUGH the recent Crinoids have been the subject of much study, and the group may now be regarded as fairly well known from the point of view of morphology and classification, our information as to the habits and mode of life of the living animals is almost confined to the common European species of Antedon. Two important contributions on this subject are published in the eighth volume of "Papers from the Department of Marine Biology of the Carnegie Institution of Washington," among the results of the recent expedition sent by the institution to Torres Straits. Mr. H. L. Clark has investigated the habits and reactions of many species of Comatulids occurring at Torres Straits, and finds that the different genera and families show important differences in the methods of locomotion and feeding, and in their responses to various stimuli. He especially combats the view that the crinoids are predominantly sessile organisms, and he finds that while members of certain families, such as the Comasteridæ, "do not swim, but only creep about by the use of the arms," others are good swimmers and possibly capable of "real migrations." As regards food, he found that the species investigated were almost exclusively vegetable feeders, and were most abundant in situations where a rich phytoplankton was accessible. All were negatively phototactic, and were markedly intolerant of even a slight increase of temperature, although they appeared indifferent to considerable variations in the salinity of the water. A paper by Mr. F. A. Potts, on the fauna associated with the crinoids of a tropical coral reef, describes in detail an extraordinary list of Crustacea, Ophiurids, Polychætes, Myzostomes, and Molluscs, living as commensals or as parasites on the crinoids of the same region. In all these a more or less close resemblance to the host in colour and colour pattern is observed, and in some cases where the host species is variable in colour the commensal shows a coincident variability. The phenomena are compared with those investigated by Gamble and Keeble in Hippolyte, and, as in that case, the mechanism by which this resemblance is brought about remains obscure.

THE "Flora of New Mexico," by Messrs. E. O. Wooton and P. C. Standley, forms vol. xix. of Contributions from the United States National Herbarium. The flora is a list of all the species of phanerogams and vascular cryptogams at present known to occur within the State, and keys to the families, genera, and species are also given. New Mexico embraces an area of 122,000 square miles, and many portions of the area have not yet been botanically explored, so that it is probable the number of known species, now nearly 3000, will be increased in the future. The volume is based very largely on the personal observations of the authors, Mr. Wooton having spent some twenty years in New Mexico, but all other available material has also been examined. The book consists of 793 closely printed pages, and is published with a complete index and a geographic index. Under each species the type locality is recorded, and the range is given. Among the most largely represented families may be mentioned Compositæ, 158 genera and 585 species; Leguminosæ, 32 genera; 189 species; Scrophulariaceæ, 22 genera, 100 species; Cruciferæ, 30 genera, 101 species; and Gramineæ, 74 genera with 270 species.

IN commemoration of the twenty-fifth anniversary of the founding of the Missouri Botanical Garden by Henry Shaw in 1889, a celebration was held at Missouri on October 15–16 of last year, to which American and foreign botanists were invited to attend and contribute papers. The anniversary Proceedings have recently been issued in a volume of 400 pages, and form vol. i., Nos. 1 and 2, of the Annals of the Missouri Botanical Gardens. The speeches given at the banquet occupy the first thirty-two pages, and in the opening speech the history of the garden is detailed. Among the papers published, which were presented at the meeting, may be mentioned "The Vegetation of Mona Island," by Dr. N. L. Britton; "The Flora of Norway and its Immigration," by Dr. N. Wille; "The Phylogenetic Taxonomy of Flowering Plants," by C. L. Bessey; "The History and Functions of Botanic Gardens," by A. W. Hill; a paper on the colloidal properties of protoplasm, by Dr. F. Czapek; "The Law of Temperature connected with the Distribution of Marine Algæ," by W. A. Setchell; "Phylogeny and Relationships in the Ascomycetes," by G. F. Atkinson; and "A Conspectus of Bacterial Diseases of Plants," by E. F. Smith.

THE East Anglian Institute of Agriculture has issued a leaflet on the composition and value of feeding stuffs which should help farmers to compound the most economical rations for all classes of stock. Information of this kind is of special importance at the present time as many of the better-known feeding stuffs have advanced considerably in price, while several new foods have come on the market which can often be profitably substituted for them. Analyses are given of more than one hundred different foodstuffs examined at the Chelmsford laboratories, together with simple directions for calculating their value from the analytical figures. By comparing the calculated value with the market price, the farmer may protect himself against the excessive prices often charged for compound cakes and meals. As one example of the method, it is shown that linseed cake has a calculated value of 9*l.* 6*s.* a ton, and is not worth the present market price of 11*l.* 17*s.* unless required for some very special purpose. Farmers in Essex and Hertfordshire can have a copy of the leaflet free on application to the principal of the institute, Chelmsford.

"A STUDY of Soil Erosion and Surface Drainage in India," by Mr. Albert Howard, is published in Bulletin No. 53 of the Agricultural Research Institute, Pusa. Enormous quantities of valuable soil are annually lost throughout India, owing to unrestricted erosion caused by rain-wash. This erosion leads to waterlogging, which in turn, by destroying the porosity of the soil and by causing denitrification, leads to further damage. Erosion occurs both on the hills and in the plains. Thus, in the hill tracts of Ceylon, when the forest canopy was removed to allow the land to be put under coffee, now succeeded by tea, no provision was made to retain *in situ* the fine soil of the original forest, and as a consequence the fertility and water-retaining power of the soils of the tea plantations have been much reduced, necessitating the expenditure of large sums on manures. Mr. Howard urges that where forest land is sold for agricultural use, a regulation to terrace it immediately should be enforced. As remedies against erosion and waterlogging in the alluvial tracts of peninsular India, he advocates embankments and surface drainage. He describes in detail a special method of drainage which has been worked out of late years at Pusa, and is now being adopted on the indigo estates of Bihar. The aim of this method is to retain the fine silt on the land. To carry out the Pusa system, drainage maps, as originally devised by Sir Edward Buck, are recommended, as they have proved to be more useful than professional level maps. Soil-protection works in Central India are described by H. Marsh in an appendix to the bulletin.

DISCOVERIES of nearly complete skeletons of the primitive amphibians or Labyrinthodonts are becoming numerous and widespread. A group of several specimens of a species named *Myriodon senekalensis* has been found in a quarry in the Karoo formation near Senekal, Orange Free State, and is described by Dr. E. C. N. van Hoepen in the Annals of the Transvaal Museum, vol. v., part 2 (August, 1915). The head alone is imperfect, the other bones being well preserved in their relative natural positions. In general characters the skeleton agrees with that of the European and North American Permian forms, in which the vertebræ are represented by separate pleurocentra and hypocentra. The only peculiar feature is the presence of a mosaic of very thin polygonal plates, each bearing minute denticles, covering the interpterygoid vacuities of the palate. These may have been plates in the skin between the rami of the lower jaw; but the fact that their teeth are identical with those on the pterygoid bones suggests that they may have been loosely fixed in the roof of the cavity of the mouth.

A FEW years ago the American Museum of Natural History, New York, obtained from a Cretaceous formation in Montana, U.S.A., remains of the largest known carnivorous dinosaur, with a skull very like that of the familiar Megalosaurus, but not less than 5 ft. in length. A plaster cast of this skull is exhibited in the Geological Department of the British Museum (Natural History). Considerable parts of two skeletons have now been restored and mounted in the American Museum, in the attitude of combat over a skeleton of the herbivorous dinosaur Trachodon. As restored, the skeleton is closely similar to that of the other megalosaurs, with heavy hindquarters and a long swimming tail, very small forequarters, grasping fore limbs, and a relatively large head. The total length is 47 ft., and when the body is raised in the attitude of walking on the hind limbs the height to the top of the head is about 20 ft. Photographs of the specimens, with a hypothetical restoration of the living animals, are published in the *Scientific American* for October 9 (vol. cxiii., No. 15).

THE Geological Survey of England and Wales has just issued a second edition of the very important memoir on "The Coals of South Wales," the first edition of which appeared in 1908. It will be remembered that this memoir was devoted mainly to an attempt to solve the problem of the origin of anthracite, and for this purpose very numerous analyses of the coals of the South Wales coalfield were made and collected, and were tabulated in such a manner as to serve to show the progressive change of the coals from steam coals into anthracite on traversing the coalfield in a north-westerly direction. This is shown on charts by what Dr. Strahan terms lines of *iso-anthracitism*, that is, lines drawn through points in the different seams where the ratio of the percentage of carbon to the percentage of hydrogen is the same. This ratio affords a good measure of the anthracitism of a coal, and lines drawn in this manner indicate clearly the direction and rate of progress of the gradual change from steam coal to anthracite. In the new edition some 118 additional analyses are included, and these have been found to be of considerable assistance in completing and adjusting the positions of the iso-anthracitic lines. It is noteworthy that this large number of new analyses, which add more than 50 per cent. to the original number, fall quite readily into their place in accordance with the original scheme, and have not necessitated any serious change in the positions of the iso-anthracitic lines, or any modification of the theory of the origin of anthracite put forward in the original memoir. The work of the last six years may therefore be looked upon as affording valuable confirmation of the conclusions arrived at in the first edition of this important piece of work.

THE Mersey Docks and Harbour Board has issued the report of the Liverpool Observatory for the year 1914. Time signals are given each day except Sunday by the firing of a gun in the Morpeth Dock, worked automatically from the observatory, and showing Greenwich mean time. Earthquake instruments are in regular use, and experiments are being made with a seismograph designed by Mr. J. J. Shaw, the results of which are said to be eminently successful. A table is given of the earth tremors that have been registered during the year. Astronomical observations continue to be made with unbroken regularity, and the solar eclipse of August and the transit of Mercury last November were well observed. For the meteorological side of the observatory the self-recording instruments for the automatic registration of atmospheric pressure, the force and direction of the wind, and the amount of rain are said to have worked without failure the whole of the year. A table is given showing the total amount of sunshine on each day throughout the year, also a table showing the maximum wind velocities on each day, and detailed daily meteorological observations are given for various elements. The control of the observatory remains under Mr. W. E. Plummer.

A SUMMARY of rainfall, mean temperature, and sunshine for the third quarter—July, August, and September—during the thirty-five years 1881 to 1915 has been issued by the Meteorological Office as an appendix to the Weekly Weather Report. The heaviest rainfall for the period in 1915 was 275 mm. in the east of Scotland, which is the only occurrence of the fall being heavier than in the north or in the west of Scotland, according to the means for the several lustra from 1881 to 1910, or in the several seasons for the individual years from 1911 to 1915. An examination of the results for the individual years of the several lustra also show no instance of the rainfall for the three months being greater in the east of Scotland than in both the north and west. The percentage of the average rainfall in 1915 was largely in excess in all the eastern districts, the mean being 122 per cent., while for the western districts the rainfall was everywhere deficient except in the south of Ireland, the mean of all districts being 88 per cent. of the average. The highest mean temperature for the three months in 1915 was 60·0°, in the English Channel, and the lowest 54·1°, in the north of Scotland; the excess or deficiency from the average nowhere amounted to 1°, and was generally only a few tenths of a degree. Bright sunshine was generally slightly in excess of the average in the western districts, and there was a slight deficiency in the eastern districts.

The report on the Survey of India for 1913–14 records much useful work. The new topographical survey makes steady progress. More than 300,000 square miles have been done since 1905, but about half a million remain to be done. About one-sixth of the total number of one-inch sheets of the map of India are now published, and a half-inch map is proposed. Of the quarter-inch map some new sheets were published, making a total of 18 out of 450. Most of the sheets of India, Afghanistan, and Baluchistan on the one-millionth scale are ready. Layer colouring has been adopted for the more recent ones. The scale of tints is still to be the subject of experiment. Several sheets of the international one-millionth with the Paris colour scheme are in preparation. During the year three sheets of Afghanistan, Baluchistan, and Northern Persia on a scale of 1 to 2,000,000 were published. The sheet of southern Persia previously appeared. Others of India on this scale are in preparation.

Hydrographical investigations in Faroe waters form the subject of a paper by J. P. Jacobsen in *Meddelelser fra Kommissionen fer Havundersøgelser* (Bind ii., Nr. 4, 1915). In Trangisvaag Fjord, where most of the work was done, it was found that the water-level changed with the barometer, but that the influence of prevailing winds was extremely slight. A fourteen-day period of change was also observed. Investigations on the currents of the waters between the Faroes and Shetland bear out Nansen's previous discoveries, that the north-going current along the Shetlands is strongest where the depth is between 150 and 200 metres. The same is the case with the south-going current along the eastern side of the Faroe plateau. The lower surface temperature and salinity over banks than in adjacent waters in the north-east Atlantic has more than once been noted. This phenomenon Mr. Jacobsen believes he has traced to the greater mixing of the upper and lower water on the banks than elsewhere, due largely to strong tidal currents. In deeper places the mixing was far less pronounced.

Prof. Ignazio Galli, whose notes on lightning we have had occasion from time to time to cite, recently published an account of a lightning stroke which fell on January 25, 1915, in Rome, upon the Church of San Gioacchino in Selci. He himself witnessed from a distant house a brilliant light of an orange colour and heard a single sudden explosion. He believed it to be a case of globe lightning. Subsequent inquiry of witnesses in the neighbourhood confirmed him in the opinion; they described the appearance as a red or reddish globe, 40 to 45 centimetres in diameter, which, moving over the roofs from north towards south, struck the cross of the church with a blinding light and a deafening crash. It is singular that Prof. Mengarini, of Rome, when a student at the Technical Institute, near San Pietro in Vincoli, witnessed a similar lightning stroke fall on the same church on February 28, 1876.

Circular No. 38 of the Bureau of Standards, Washington, a third edition of which has recently been issued, deals with the subject of testing india-rubber goods. Both physical and chemical methods of testing are included in the descriptions. It is pointed out that the constantly increasing demand for rubber goods by the general public, by railway companies, and other large consumers, indicates the necessity for developing standard specifications and tests for rubber, as has been done in the case of iron and other materials. In connection with the chemical tests, explanations are given showing the significance of certain determinations and the reasons for making them. This is done, for example, as regards the acetone extract, the sulphur, the waxes, and the extracts obtained with chloroform and with alcoholic potash; the idea being to enable a person who knows but little of rubber chemistry to understand the import of these analytical data. The operations as carried out by the bureau are set out in some detail, and, in addition, a specification and suggested method of analysis for rubber insulation compounds adopted by the Joint Rubber Insulation Committee are included for general information, though not officially endorsed by the bureau. Those interested in the subject may find it useful to consult the circular, which is a convenient epitome of the usual tests.

To meet modern conditions governing condensation of steam in power plants, it has become usual to extract the air and water from the condenser by independent means. High-speed centrifugal pumps provide very effective means of removing the condensate, and various forms of steam and water-jets, or pumps, are in use for the removal of the air. An interesting example of one of these new forms of air pumps—on the Williams-Müller system—is described in *Engineering* for November 12. The system is applied to a condenser for a 8500-kw. turbine at the Sheffield Corporation power station. This condenser is to give a vacuum of 28·5 in. at full-load output when supplied with circulating water at 62° F. The jet-pump is in principle identical with the common filter-pump used in laboratories, but much experiment has been necessary in order to determine the most suitable arrangement and proportions. In a trial of one installed at Glasgow, it was found that, starting with the condenser full of air at atmospheric pressure, a vacuum of 20 in. was attained in 2½ minutes, and 29 in. in 8 minutes.

The annual report of Lloyd's Register for 1914–15 was published recently, and it is interesting to note that, in spite of losses owing to the war, the tonnage classed with Lloyd's for the year ending June 30 last was 300,000 tons in excess of that classed for the previous year. More than 300 vessels have been built, or are being constructed, on the Isherwood system of longitudinal framing; the tonnage of these vessels amounts to 1,675,000 tons gross. There are 290 vessels now classed for the carrying of petroleum in bulk, and there is a large and increasing demand for such vessels. Proposals have been approved for the carrying of oil in circular tanks placed in the holds of ordinary cargo steamers. Several geared-turbine vessels have been approved during the year. Two are being built in the United States in which Curtis turbines are to be installed; the speed reduction in these ships will be from 3500 revolutions per minute at the turbine to about 90 at the propeller. There are now thirty-eight vessels classed at Lloyd's which are fitted with Diesel engines. The granting of scholarships has been postponed until the end of the war; those postponed will be available then, in addition to those which will be open in the ordinary course of events. The use of wireless telegraphy and submarine signalling increases rapidly, and there are now on the society's books 2939 vessels fitted with wireless, and 947 fitted with submarine signalling apparatus.

With its issue of October last, the American magazine known for many years as the *Popular Science Monthly* changed its name to the *Scientific Monthly*. The old name has been transferred to a second contemporary, the *World's Advance*, which will in future be known as the *Popular Science Monthly and World's Advance*. The functions of the two magazines as now arranged will be quite distinct. The *Scientific Monthly* will publish articles which appeal especially to educated readers as opposed to purely popular matter intended for the public generally; the *Popular Science Monthly and World's Advance*, to quote the magazine itself, "presents to its readers the new, the practical, and the unusual in modern science, mechanics, and electricity." It will strive to be a fascinatingly interesting, easily grasped, and trustworthy monthly record of the latest achievements in science, invention, and industry.

Messrs. J. and A. Churchill announce the early publication of "Catalysis and its Industrial Applications," by E. Jobling, and a new edition of "An Introduction to the Physics and Chemistry of Colloids," by E. Hatschek.

OUR ASTRONOMICAL COLUMN.

Parallaxes of 70 Ophiuchi and 6 Cygni.—Photographic measures of the parallaxes of these binary systems have been made by Prof. S. A. Mitchell at the McCormick Observatory, University of Virginia (*Astrophysical Journal*, October, 1915), using the 26-in. Clark refractor, the same aperture, it will be noted, as that employed at Greenwich on similar work. The results obtained are as follows:—

(1) 70 *Ophiuchi.*

Brighter star (4·3 mag.) $\pi = +0{\cdot}145'' \pm 0{\cdot}007''$
Fainter star (6·0 mag.) $\pi = +0{\cdot}165'' \pm 0{\cdot}007''$

(2) 6 *Cygni.*

Brighter star (6·6 mag.) $\pi = +0{\cdot}051'' \pm 0{\cdot}006''$
Fainter star (6·8 mag.) $\pi = +0{\cdot}036'' \pm 0{\cdot}007''$

The Solar Eclipse of 1916, December 24.—The Rev. William F. Rigge, S.J., has worked out particulars regarding this eclipse (Monthly Notices, R.A.S., No. 9, 1915). Visibility is restricted to a small area of the Antarctic Ocean midway between the Cape of Good Hope and the south pole. Theoretically the conditions are noteworthy, and have raised special difficulties in the construction of the map. At maximum only 0·011 of the sun's diameter is obscured from a point about 32° E. long. and 66° S. lat., the sun being on the horizon. The moon's penumbra barely overlaps the earth, and as the date is so close to the winter solstice the penumbra falls on the Antarctic circle *beyond* the south pole, and consequently moves *against* the diurnal rotation. Further, for some places it is an eclipse of the Christmas midnight sun.

The Radial Velocities of Five Hundred Stars.—The power of the 60-in. reflector is strikingly manifest in the latest list of stellar radial velocities by Dr. W. S. Adams (Contr. Mt. Wilson Solar Observatory, No. 105). The stars included are mostly fainter than 5·0 mag., but there are many fainter than 8·0 mag., and at least one fainter than 9·0. The velocities for all these stars depend on three or more observations. The table gives type of spectrum, total proper motion observed, radial velocities, and velocities corrected for solar motion. Determinations of about fifty of the stars have been made at other observatories, chiefly at Lick, and notwithstanding the greater dispersion employed at that observatory, the agreement is remarkably good. Incidentally, velocities of about thirty-four additional parallax stars are included. Some stars of special interest are:—AOe 14320 (spect. GO) with the high velocity of +299 km./sec., which, combined with its proper motion and parallax, gives an absolute velocity of 577 km./sec., and Boss 2647; although this star has a spectrum of the A type, it has the high radial velocity of +87 km./sec.

The Colour Index of S Cephei.—In several ways S Cephei is an object of exceptional interest. It is at once a circumpolar variable of long period, and one of the deepest coloured of red stars. The special importance of obtaining data concerning it is obvious, but, unfortunately, not less obvious are the observational difficulties it presents. At Harvard Observatory attention has been paid to it for many years, and lately Miss H. S. Leavitt has made a preliminary study of its colour index (Circ. Harv. Coll. Obs., No. 188), partly on the basis of observations made in 1897. The extraordinarily large value of the colour index puts this star beyond reach of the Harvard prismatic cameras using ordinary plates, whilst with yellow screen and plates stained with erythrosin there results an image nearly monochromatic, the effective light having a wave length of about 5600 tenth metres. Düner, however, was able to classify its spectrum (Type IV.!!) by visual observation. The results drawn from a comparison of visual and photographic magnitudes of the star have been confirmed by a series of photographic photovisual observations. It appears that S Cephei has a colour index of fully five magnitudes at its maximum phase. Increasing as minimum is approached, it may reach six and a half magnitudes, whilst the visual and photographic maxima are probably not simultaneous. It may be added that the visual magnitudes range from 7·70 to 10·8 mag., whilst photographically the range is 12·62 to $<16{\cdot}0$ mag.

MARINE BIOLOGICAL RESEARCH.[1]

THE annual report on the investigations carried on during 1914–15 by Prof. A. Meek and his colleagues contains papers of general interest. Mr. Storrow writes on several faunistic records, and Mr. T. Bentham contributes a note on what appears to be a new hæmogregarine from the skate. The purely

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[1] Report for 1914–15 of the Dove Marine Laboratory at Cullercoats, Northumberland. (Published for the Northumberland Sea Fisheries Committee.)